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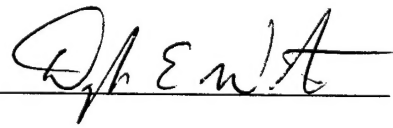
**PRECISION NAVAL FIRES IN THE AGE OF INFORMATION  
SUPERIORITY: IS THE DAY OF THE CARRIER OVER?**

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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## ABSTRACT

In the coming age of Information Superiority, there are those who question the United States Navy's continued focus on the big-deck aircraft carrier. Advanced cruise missiles, strategic bombers, Air Expeditionary Forces (AEFs), and distributing aviation onto smaller, more numerous carriers have all been proposed as options to the expensive and presumably ever more vulnerable big-deck carrier in the future.

However, there are problems with each of these proposed alternatives to the aircraft carrier. There are continued weaknesses in the ability of even advanced cruise missiles to attack several types of targets. Cruise missiles will continue to be a complement to, not a replacement for, air power. Relying solely on land-based air power has proven to be too risky, as access denial, overflight restrictions and other constraints have seriously limited the capability of land-based air to respond in many crises in the past. The size of the big-deck carrier gives her both independent operating capability and improved survivability over smaller carrier designs. Future carriers will need to be the same size or larger than the current Nimitz class or risk reduced capability and effectiveness.

Joint Vision 2010 outlines the requirements for future force capability. In order to attain the vision as described in all scenarios, the Navy will need to maintain the capability of the big-deck carrier, and continue to operate a minimum of 12 carrier battle groups in 2010 and beyond.

## INTRODUCTION

Joint Vision 2010 attempts to lay the framework for how the armed forces of the United States will fight and win its wars circa 2010 and beyond. While four operational concepts (Dominant Maneuver, Precision Engagement, Full Dimensional Protection and Focused Logistics) are developed, there are a lot of unanswered questions that naturally foster debate as to how the various services will shape their forces and their doctrine to achieve the called for "Full Spectrum Dominance".<sup>1</sup> For example, there are those who would dispute the U.S. Navy's continued focus on the big-deck aircraft carrier in the coming age of information superiority and precision engagement. Critics have argued that the carrier, due to its expense and presumed vulnerability, should be replaced by platforms launching hundreds of long range precision weapons aided by precise targeting garnered by information superiority, long range strategic bombers and Air Expeditionary Forces (AEFs), or distributing naval air onto smaller and more numerous "carriers".<sup>2</sup> It is the intent of this paper to show that the contrary is true, that the big-deck aircraft carrier will be absolutely critical to full attainment of the operational concepts promulgated in Joint Vision 2010.

The paper will begin with discussion of the various arguments against the big-deck carrier, and in the process, some important questions need to be addressed. With the increasingly sophisticated technology available to our enemies in 2010 and beyond, is the big-deck carrier too vulnerable? Can the U.S. Navy replace her with surface combatants armed with advanced cruise missiles and empowered by the information available from network-centric command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) architectures? Can the U.S. Air Force (USAF) adequately project power with a primarily continental U.S. (CONUS) based force to allow for reduction or elimination of the costly CVX

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<sup>1</sup> Chairman, Joint Chiefs of Staff, Joint Vision 2010 (Washington, D.C.: 1996), 26.

<sup>2</sup> Charles Girvin, "Twilight of the Supercarriers," Proceedings, July 1993, 40-45. A good example of this viewpoint.

program? Should the U.S. Navy distribute it's air arm on a greater number of smaller, but less capable, carriers? And most importantly of all, how does all this fit into the Joint Chief's vision of how the U.S. military will operate 2010 and beyond? After reaching conclusions on all these important questions, it should be apparent that the big-deck aircraft carrier will contribute, and indeed be critical to, the attainment of the full spectrum of concepts espoused in Joint Vision 2010.

## ADVANCED CRUISE MISSILES

While the controversial Arsenal Ship has been canceled, there are still those who espouse the virtues of developing a similar platform or outfitting existing platforms with advanced cruise missiles to supplant the traditional strike role of the aircraft carrier. For example, DD-21, the Navy's concept for its next generation "land-attack destroyer", is being credited with the capability to stop an enemy land-force of up to battalion strength through the use of its long range precision weapons and network-centric C4ISR architecture.<sup>3</sup>

While the success of the current generation Tomahawk cruise missile against fixed, non-hardened targets can not be denied, there are still substantial limitations to the current use of cruise missiles against mobile or hardened targets.<sup>4</sup> Proponents concede as much, but claim that advances in technology and the ability to locate and target anything in the battlespace through information superiority will allow a long range precision strike weapon to engage targets that currently must be attacked by manned aircraft, and with the politically important benefit of doing so without the need to put aircrew at risk. So called "brilliant submunitions" that are dispensed and autonomously track multiple targets can be effective against mobile targets (the Army Tactical Missile System's Brilliant Antiarmor Submunitions (ATACMS/BATs), currently under development, is an example of this class of weapon).<sup>5</sup> Improved warhead designs and terminal area delivery profiles should allow standoff cruise missiles to have more success engaging hardened or buried targets requiring penetration.<sup>6</sup>

While technological advances will certainly improve cruise missile capability, there are still

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<sup>3</sup> T. McKearney, "The DD-21 as Deus ex Machina," Proceedings, July 1998, 2.

<sup>4</sup> John Birkler and others, A Framework for Precision Conventional Strike in Post-Cold War Military Strategy (Santa Monica, CA: Rand, 1996), 28-30.

<sup>5</sup> Ibid., 8-11.

<sup>6</sup> R. Lynch, "Beyond Tomahawk," Proceedings, April 1993, 55-56.

areas that will be problematic. Use of brilliant submunitions near friendly troop positions obviously brings with it a high chance for fratricide. A man in the loop system will be required for the foreseeable future for this Close Air Support (CAS) role. Mobile targets will still present major challenges to a long range cruise missile, as a significant technological and synergistic effort will be required to locate a moving target, load a mission, launch a weapon with it's relatively long time of flight while maintaining track of the target and updating the cruise missile in flight from another platform (most likely an aircraft) to arrive within an acceptable "basket" to track and destroy it.<sup>7</sup> Whether it be CAS or attacking mobile targets, the best platform for making decisions to strike fleeting targets in a chaotic environment will likely remain the aircraft.<sup>8</sup>

While there will always be targets within heavily defended terminal areas that are best attacked by unmanned cruise missiles, it's important to note that advances in technology will also bolster aircraft survivability. Stealth technology, greater stand-off weapons and active and passive countermeasures all will increase aircrew survivability significantly and mitigate some of the increased risk in putting aircrew over a target area.<sup>9</sup> The same advances in technology that will bolster cruise missile performance will also improve air delivered precision weapon capability (the Joint Standoff Weapon (JSOW) and Joint Direct Attack Munitions (JDAM) are two examples currently under development). These aircraft delivered weapons will retain a man in the loop and, significantly, be procured at far less cost than a cruise missile alternative.<sup>10</sup>

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<sup>7</sup> Birkler and others, 30.

<sup>8</sup> Timothy Conroy, A Coming of Age: The Implications of Precision Guided Munitions for Air Power (Monterey, CA: U.S. Naval Postgraduate School Thesis, 1993), 15.

<sup>9</sup> The USAF F-117, B-2, F-22 and the joint USN/USMC/USAF Joint Strike Fighter are all examples of stealthy aircraft that should be available to the operational commander 2010 and beyond.

<sup>10</sup> Conroy, 66. For example, Conroy reports JDAM Phase I costs approx. \$40,000 per copy. Incorporation of Phase II and III (new explosive and second sensor) will bring total estimated cost to \$100,000 per copy. This is in contrast to the current average cost of a Tomahawk at between \$800,000 to \$1,000,000 per copy.

Even in areas where cruise missiles and manned aircraft both have capability against the same target set, risk alone is not the only variable involved in determining which weapon system to use. Network-centric operations circa 2010 and beyond should allow, through sophisticated sensors, fast and powerful networks and digital display technology, an operational commander to build and employ an engagement grid.<sup>11</sup> This grid will allow a rapid and self-synchronizing massing of effects against selected targets by a variety of potential platforms, with the optimal weapons being brought to bear on a specific target. Eliminating the option of air delivered ordnance on the future battlefield will greatly diminish the speed and effectiveness of the engagement grid. Additionally, with the numbers of targets that will likely need to be engaged in any major regional contingency, budgetary realities simply will not allow a sufficient inventory of advanced high unit cost cruise missiles to be the only option. Air delivered ordnance will need to continue to play an important role in strike operations of the future.<sup>12</sup> Planners will have to weigh cost, risk, capability and availability when deciding on employing either advanced cruise missiles or manned aircraft in a given scenario.

Future advances in cruise missile capability and associated launch platforms are certainly desired, as they will increase options available to the CINC or Joint Task Force Commander, but it is important that operational commanders understand their strengths and limitations. The Tomahawk of the future will continue to function as a complement to, not a replacement for, air power.

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<sup>11</sup> Arthur Cebrowski, "Network-Centric Warfare--Its Origin and Future," Proceedings, January 1998, 32.

<sup>12</sup> Charles Perry and others, Long Range Bombers and the Role of Airpower in the New Century (Hollis: Puritan Press, 1995), 47.



## GLOBAL ENGAGEMENT AND THE AEF

Once the U.S. decides to engage--while naval forces are steaming to the littorals and ground forces are being transported to the affected theater--the Air Force can employ air power to achieve theater situational awareness, to stop aggression in its tracks, to attack enemy strategic and tactical centers of gravity, and to seize control of the air to provide cover for later arriving forces.<sup>13</sup>

Proponents of Global Engagement and the AEF concept would undoubtedly endorse the conclusions reached in the cruise missile versus air power discussion above. Some, however, would question the ability of carrier-based aircraft to project power ashore as effectively as land-based air forces. While rarely stating (publicly at least) that the Air Force can completely replace carrier-based air with long range strategic bombers and AEFs, the capabilities inherent to naval air forces are frequently minimized to a point that begs the question. As General Fogleman states in a series of 1996 interviews with *Air Force Magazine*, "The recent crisis during Taiwan's elections was an 'ideal use' of aircraft carriers...Nevertheless, if the U.S. had gotten into a serious scrape with China, 'we would have had to have bombers moved into the western Pacific....You're not going to take on China with a couple of aircraft carriers;...you're going to get serious.'"<sup>14</sup> In the General's view it seems, deploying an aircraft carrier to an area of operations is a great means of sending a message, but if you plan on actually employing air power, better make way for the USAF.

General Fogleman does make some valid points however. CONUS based long range strategic bombers, particularly the B-2, have the ability to strike with precision within a matter of hours anywhere in the world with a high likelihood of survivability. An AEF can be tailored to a CINC's needs, and if the strategic situation allows, rapidly respond, and sustain the same

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<sup>13</sup> Ronald Fogleman, "Advantage USA: Air Power and Asymmetric Force Strategy," Air Power History, Summer 1996, 10.

<sup>14</sup> John Tirpak, "First Force," Air Force Magazine, September 1996, 40.

number of sorties per day (or more) as a carrier air wing.<sup>15</sup> This capability was demonstrated when an AEF comprised of 18 F-16s stationed in Bahrain "filled in" for a carrier battle group in the gulf. The advantages in massing large numbers of land-based aircraft in a theater (such as Taiwan) to wage a major decisive air operation over relying solely on carrier air was vividly demonstrated during Desert Storm. Even with the presence of six aircraft carriers in theater, only 15% of the total tonnage of delivered ordnance against Iraq was expended from aircraft off of carriers, the rest being provided by land-based aircraft. In high intensity operations it would seem, land-based air has the clear advantage.<sup>16</sup>

There is one nagging problem with this concept - not all (or most) contingencies the operational commander may need to respond to are high intensity, and in order to employ land-based air forces, overseas basing rights must be available. While CONUS based strategic bombers can still respond to a regional contingency without having to rely on an available airfield in theater, only the most ardent proponents of Global Engagement will argue that the strategic air arm alone can maintain the presence required to adequately project power and protect U.S. Forces from hostile air in a distant theater.<sup>17</sup> That being so, proponents of land-based air tend to discount the basing rights issue. They argue that it has little relevance, "since the United States has never been denied military success because of runway unavailability."<sup>18</sup> While this may be true, what is not stated is that it was carrier air power that filled the gap when runways did indeed become unavailable. A 1995 Rand study found a significant history of access denial, overflight restriction and other constraints on land-based aircraft during contingency operations since World War II. As stated in the conclusion:

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<sup>15</sup> J. Neubauer, "Air Expeditionary Forces Providing Operational Alternatives," (Unpublished Research Paper, U.S. Naval War College, Newport, RI: 1996), 5-8.

<sup>16</sup> Charles Perry and others, Long Range Bombers and the Role of Airpower in the New Century (Hollis: Puritan Press, 1995), 18.

<sup>17</sup> Neubauer, 12.

<sup>18</sup> Ibid.

Without a doubt, land-based aviation and, as a component of this, the U.S. Air Force, has contributed to every significant operation over the past 48 years and often in very important ways. These contributions should not mask the fact, however, that basing (and other) constraints have seriously limited this contribution to many of these operations.<sup>19</sup>

The big-deck carrier and her embarked air wing however, needs no basing rights, as she can operate, as U.S. sovereign territory, anywhere in international waters. This flexibility is a great asset for the theater CINC, as he can respond with a range of options up to and including air strikes without the need to obtain other nation approval or subject CONUS based forces to a rapid deployment overseas. Even during a high intensity regional contingency, carrier-based air can immediately begin offensive, defensive or deterrent operations and provide force protection while CONUS-based aircraft are deploying to the theater. For example, two carrier battle groups were the only significant forces available to CINCCENT during the early days of DESERT SHIELD, and may have played a decisive role in deterring Iraq from invading Saudi Arabia. During the early stages of the Korean War, carriers in the far east were the only viable means of projecting power in theater after the North Koreans overran most of the air bases in the south.<sup>20</sup> Even during Vietnam, after a rapid build-up of ground forces in 1965, it was carrier air power that was required to provide the bulk of the support for troops on the ground until the air bases in the South could be augmented to fully support the build up.<sup>21</sup> While no one would argue the robust capabilities that land-based air bring to a theater commander responding to a major regional contingency, clearly there is a very real need for the flexibility and capability of carrier-based air in any given theater of operations.

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<sup>19</sup> Adam Siegel, Basing and Other Constraints on Land-Based Aviation Contributions to U.S. Contingency Operations (Alexandria, VA: Center for Naval Analyses, 1995), 27.

<sup>20</sup> Norman Friedman, Carrier Air Power (New York: The Rutledge Press, 1981), 149.

<sup>21</sup> Siegel, 17.

## CARRIER COST, SURVIVABILITY AND DISTRIBUTED AVIATION

Throughout the existence of the big-deck aircraft carrier, the cost associated with building and deploying carrier battle groups has spurred continual debate in both the U.S. military and its civilian overseers. For example, in 1949 under the Truman administration, just four years after the end of World War II, the carrier *United States* was canceled for budgetary reasons. Just 14 months later this same administration came to the embarrassing realization that carriers in the far east were the only viable means of projecting U.S. air power into Korea.<sup>22</sup> This "cost versus capability" corollary continues today, as maintaining procurement funding for CVN-77 was a difficult sell in the current fiscally austere defense climate, even though the Joint Chief's "flexible forward presence" policy requiring a 12 carrier force had previously been agreed to be necessary.<sup>23</sup> To the budget cutter the large unit cost of a Nimitz class aircraft carrier or CVX follow-on is especially inviting, so opponents attempt to argue that the proven requirement for the capabilities that only this platform can provide are no longer valid. As Norman Friedman states in Carrier Air Power: "History is a guide, but Western governments have a habit of imagining that somehow it will not be repeated, particularly when large sums of money are involved."<sup>24</sup>

The issue of cost is further clouded by the requirement for a large upfront outlay to build a carrier. While the cost of other weapons systems can be spread out over the life of the program and reductions can be made to desired numbers of platforms to reduce cost in any given year, it is somewhat more difficult to deliver only two-thirds of an aircraft carrier.<sup>25</sup> What budgeteers

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<sup>22</sup> Norman Friedman, Carrier Air Power (New York: The Rutledge Press, 1981), 149.

<sup>23</sup> J. Hessman, "'This Dangerous and Unpredictable World,' A Carrier for the 22nd Century?," Sea Power, October 1997, 43.

<sup>24</sup> Friedman, 149.

<sup>25</sup> *Ibid.*, 151.

fail to factor, and our procurement system encourages, is overlooking the total cost associated with a weapon system over its entire service life. A new construction aircraft carrier has a life expectancy of 50 years, and if history is any guide, over that 50 years it will make 25 overseas deployments, respond to more than 20 international crises and see action in several major regional conflicts.<sup>26</sup> When looked at over the life of the program, the carrier can be seen as being extremely cost effective.

Not every critic of the cost of the big-deck carrier wants to eliminate it completely, as some see reduced numbers as the fiscally prudent course of action. A 1993 GAO study recommended reducing the number of carrier battle groups while maintaining their capability in reserve as a crisis action surge force while other naval forces provide the bulk of the overseas presence.<sup>27</sup> In a 1992 Proceedings article, a more innovative plan was described that would distribute aviation assets throughout the fleet on a smaller class ship, the Carrier Dock Multimission (CDM).<sup>28</sup> The big-deck carriers would be outfitted with only strike aircraft (primarily fixed wing), with support aircraft currently part of the Nimitz class air wing, being replaced by STOVL (short take-off, vertical landing) aircraft distributed onto the CDMs. This allows the current level of strike assets to be maintained, albeit on a smaller number of big-deck carriers.<sup>29</sup> It is estimated that this restructuring would save 17% in surface force cost due to increased commonalities among ship types and the reduction in numbers of big-deck carriers.<sup>30</sup>

While undoubtedly more cost effective, the risk of distributing supporting air assets over a larger number of less capable ships and/or reducing the numbers of big-deck carriers can not be

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<sup>26</sup> Hessman, 43.

<sup>27</sup> General Accounting Office, Navy Carrier Battle Groups: The Structure and Affordability of the Future Force, Report to the Congress (Washington, D.C.: 1993), 64-65.

<sup>28</sup> Michael Bosworth, "Fleet Versatility by Distributed Aviation," Proceedings, January 1992, 99-102.

<sup>29</sup> Ibid., 100.

<sup>30</sup> Ibid., 102.

discounted. The DOD response to the 1993 GAO report is germane to both proposals:

The GAO comparisons of alternative naval forces address only cost differences, without taking effectiveness into consideration. That is especially important in cases where forces performing presence missions must transition virtually instantaneously to a crisis response or combat role.

The maritime action groups and sea control battle groups described by the GAO...incorporate neither the power projection capacity nor the deterrent value of a carrier battle group. The carrier provides presence that includes immediate and sustainable crisis response.<sup>31</sup>

Simply reducing the numbers of big-deck carriers will save money, but it also carries with it increased risk. The requirements of the National Military Strategy need to be weighed against the cost of maintaining the current 12 carrier battle groups. This will be addressed in greater detail in the Joint Vision 2010 discussion below.

Any platform is a waste of money, however, if it is not survivable. Critics of the big-deck aircraft carrier make the case that due to its large size and specific electromagnetic emissions, it is much easier to target, especially as more and more rogue states have access to sophisticated anti-ship cruise missiles and ballistic missile technology. Perhaps distributing aviation assets onto greater numbers of smaller, albeit less capable ships is a prudent move for survivability reasons.

The first point of discussion when talking about vulnerability of aircraft carriers is that the sea itself provides a great degree of survivability. Carriers, underway and over the horizon, are much less vulnerable than a unit that is located on land. This is particularly true with the current and future likelihood of asymmetric guerrilla or terrorist attacks against U.S. forces. For example, in Vietnam 400 U.S. and allied aircraft were destroyed, and over 4,000 were significantly damaged by enemy ground attack, while not one sea-based aircraft was lost or damaged by direct enemy action.<sup>32</sup>

But what of the adversary who has the capability to directly attack sea-going forces? The current Nimitz class aircraft carrier, designed during the Cold War, had just such a threat in

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<sup>31</sup> General Accounting Office, 128.

<sup>32</sup> Hessman, 42.

mind. The requirement to support an adequate number of aircraft to allow full and robust air operations across all mission areas coupled with the need to have adequate hangar and maintenance facilities to make her self supporting drove the size of the platform to 90,000 tons. Her size also allowed a great deal of survivability features to be built in, and indeed, the Nimitz class carrier is perhaps the most survivable ship ever built.<sup>33</sup> But what of the CVX of the future? Will threat technologies drive her to be smaller and stealthier in order to make her more survivable? The National Academy of Sciences and its Naval Studies Board undertook an all encompassing look at future aircraft carrier technology in it's Carrier-21 research project. The matter of survivability was one of the main drivers in determining the recommended design and size of any future aircraft carrier. The most severe future threats that needed to be considered in the study were "stealthy, high speed, sea skimming missiles using terminal maneuvers; steep-diving missiles leaking through the outer defenses; ballistic missiles with maneuvering warheads; and large torpedoes designed to explode under the ship's keel."<sup>34</sup> Interestingly, the study found that to accommodate both future aircraft technology trends and active and passive countermeasures to increase survivability, the aircraft carrier of the future should increase in size from the current Nimitz class ship.<sup>35</sup> The case of a smaller "LHA-class" ship was specifically looked at. Survivability, magazine capacity, onboard maintenance capability and independent operating capability would all be limited in comparison with a larger ship, albeit at approximately 60% of the cost. The study concluded that the greater presence, but less capability provided by smaller more numerous carriers did not have enough advantage to

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<sup>33</sup> William Luti, "The Great Carrier Debate: 'Scratch One Flattop?,'" (Unpublished Research Paper, U.S. Naval War College, Newport, RI: 1986), 6.

<sup>34</sup> National Research Council, Naval Studies Board, Commission on Physical Sciences, Mathematics, and Applications, Carrier-21: Future Aircraft Carrier Technology Volume One: Overview (Washington, D.C.: National Academy Press, 1991), 14.

<sup>35</sup> Ibid., 23.

recommend it as an alternative or parallel system for acquisition.<sup>36</sup>

When all the factors of capability, survivability and future threat are considered, it seems the case is made for the big-deck aircraft carrier. Whether or not to continue procurement strategies to maintain greater, lesser or the same numbers of carriers in the future basically comes down to what, as a nation, we want to be able to effect in the international arena. Now is the time to revisit the vision for how U.S. forces are to be utilized and employed in 2010 and beyond.

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<sup>36</sup> Ibid., 24.



## **JOINT VISION 2010 AND THE AIRCRAFT CARRIER**

As theorized in Joint Vision 2010, the four traditional functions of maneuver, strike, protection and logistics will be so powerfully transformed by the technologies of information superiority that they become in effect, new operational concepts.<sup>37</sup> The synergy of these new operational concepts of Dominant Maneuver, Precision Engagement, Full-Dimensional Protection and Focused Logistics is envisioned to allow U.S. forces to achieve Full Spectrum Dominance. Obviously this can not be obtained without using the combined capabilities of all the services and the development of technologies allowing information superiority, but what does this mean for the Navy and the big-deck aircraft carrier?

The Operational Concepts outlined in Joint Vision 2010 all hinge on having highly mobile and agile forces, empowered by information superiority, able to mass effects to achieve positional advantage by conducting sustained, synchronized operations with decisive speed and tempo.<sup>38</sup> These forces must be able to operate effectively in all mediums: air, land, sea and space. In order to achieve this on a continuing basis around the world requires overseas presence. Only forces that can be rapidly employed (vice deployed) in a theater of operations to deter, defend or attack as required by national objectives will allow Full Spectrum Dominance from the inception of any operation. Joint Vision 2010 reminds us that in order to accomplish the tasks required of the armed forces by our National Security Strategy, "power projection, enabled by overseas presence, will likely remain the fundamental strategic concept of our future force."<sup>39</sup> It also reiterates that the bulk of our forces will remain based within CONUS. It follows that maintaining a viable overseas presence with the bulk of your forces

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<sup>37</sup> Chairman, Joint Chiefs of Staff, Joint Vision 2010 (Washington, D.C.: 1996), 19.

<sup>38</sup> Ibid., 20.

<sup>39</sup> Ibid., 4.

CONUS based will be primarily achieved by naval forces on routine deployments, augmented when required by rapid strategic deployment of other services' assets.

These same naval forces need to be able to bring a full range of weapons to bear in order to achieve asymmetric leverages against opposing forces, whether operating alone or with other joint assets. This will not be possible without the aircraft carrier. The big-deck aircraft carrier, with her ability to sustain a full range of air operations independent of any land-based infrastructure, gives the operational commander immense flexibility in any theater. In concert with other surface units within the battlegroup and/or Amphibious Readiness Group (ARG) forward deployed to a region, the carrier gives the operational commander an immediate response capability, and allows him to attack cross-dimensionally with aircraft, cruise missiles, Naval Gunfire and Marine ground forces. Without the aircraft carrier and her ability to conduct strike operations, provide CAS and importantly, achieve local air superiority, naval and other U.S. forces rapidly deploying there are at increased risk from enemy offensive operations. As discussed earlier, there are risks inherent in not having the full range of capability available on scene with the big-deck aircraft carrier and instead relying on cruise missiles or land-based air that may not be there when it is critically needed. These risks could easily leave an operational commander in a tenuous situation: how to deter and shape events within his AOR and indeed, merely protect his forces in theater without adequate air cover. Network-centric C4ISR architectures and information superiority will allow him to achieve asymmetric leverage rapidly and decisively only if he has the required forces in theater to get the job done.

The only way to truly achieve the concepts described in Joint Vision 2010 is to maintain sufficient forward deployed naval forces *centered around the carrier battlegroup* and empowered by a network-centric C4ISR architecture. This architecture will allow information superiority for the naval commander, and importantly allow naval forces to immediately employ Dominant Maneuver, Precision Engagement and Full-Dimensional Protection as required in any scenario, whether it be peacetime engagement, deterrence or actual armed conflict. Carrier-based air is critical to the attainment of this concept. Before large numbers of

ground forces are in theater, only operational and tactical fires from both aircraft and sea-based cruise missiles will allow the massing of effects against enemy centers of gravity and critical nodes and the ability to lock out enemy courses of action due to speed of command.<sup>40</sup> If land-based airpower is not available, the operational commander must have the big-deck carrier to provide this capability or lack the required assets to achieve Dominant Maneuver and Precision Engagement in the spirit of Joint Vision 2010.

But how many carriers is sufficient? A force of 15 carrier battle groups is required to maintain continuous presence in the Mediterranean, Arabian Gulf and western Pacific. The current 12 carrier battle groups is a balance between the requirement to maintain presence in these areas and current fiscal realities. The "flexible forward presence" policy means that there will be occasional gaps in coverage, but occurring at a small enough rate considering the reduced threat in some of the areas to make it an acceptable risk.<sup>41</sup> Therefore, due to the current requirements dictated by the National Security Strategy and those of the future as postulated by Joint Vision 2010, the United States can not afford to reduce carrier numbers below this level. The U.S. Navy needs to maintain 12-15 carrier battle groups to ensure that the Joint Chief's vision for 2010 and beyond can be achieved.

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<sup>40</sup> Arthur Cebrowski, "Network-Centric Warfare--Its Origin and Future," Proceedings, January 1998, 32.

<sup>41</sup> General Accounting Office, Navy Carrier Battle Groups: The Structure and Affordability of the Future Force, Report to the Congress (Washington, D.C.: 1993), 120-121.

## CONCLUSION

Navy and Marine Corps operational concepts as espoused in Forward...From the Sea and Operational Maneuver from the Sea outline many of the ideas discussed in the previous chapter, but neither sufficiently emphasizes the critical role of the aircraft carrier in attaining them. It is carrier-based air that will allow naval commanders of the future to fully exploit the information dominance that is expected to be achieved over any potential adversary. Without it, the United States runs the risk of being unable to achieve her national objectives without reliance on some other nation's air and sea ports. Not all wars can be counted on to be alike, and not all adversaries are likely to allow the United States the luxury of months of unimpeded massing of forces before engaging her as in DESERT STORM. To fully achieve the concepts as envisioned in Joint Vision 2010 in all potential scenarios, the United States must maintain the robust capability that is provided by the big-deck aircraft carrier, and she must maintain sufficient numbers of them to allow near-continual presense in the three major regions of the world. This will require a minimum of 12 carrier battle groups now, in 2010 and beyond.

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